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                 predefined hit display formats
        APR 28
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                 EMBASE Controlled Term thesaurus enhanced
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        APR 28
                 IMSRESEARCH reloaded with enhancements
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        MAY 30
                 INPAFAMDB now available on STN for patent family
                 searching
                 DGENE, PCTGEN, and USGENE enhanced with new homology
NEWS
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         MAY 30
                 sequence search option
NEWS
      8
         JUN 06
                 EPFULL enhanced with 260,000 English abstracts
NEWS
         JUN 06
                 KOREAPAT updated with 41,000 documents
NEWS 10
         JUN 13
                 USPATFULL and USPAT2 updated with 11-character
                 patent numbers for U.S. applications
NEWS 11
         JUN 19
                 CAS REGISTRY includes selected substances from
                 web-based collections
NEWS 12
         JUN 25
                 CA/CAplus and USPAT databases updated with IPC
                 reclassification data
                 AEROSPACE enhanced with more than 1 million U.S.
         JUN 30
NEWS 13
                 patent records
NEWS 14 JUN 30
                 EMBASE, EMBAL, and LEMBASE updated with additional
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                 organizations
NEWS 15
         JUN 30
                 STN on the Web enhanced with new STN AnaVist
                 Assistant and BLAST plug-in
NEWS 16
         JUN 30
                 STN AnaVist enhanced with database content from EPFULL
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         JUL 28
                 CA/CAplus patent coverage enhanced
NEWS 18
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                 CA/CAplus, CASREACT, and IFI and USPAT databases
NEWS 25
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                 enhanced for more flexible patent number searching
                 CAS definition of basic patents expanded to ensure
NEWS 26
         AUG 27
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NEWS 27
         SEP 18
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                 to be discontinued
NEWS 28
         SEP 25
                 CA/CAplus current-awareness alert options enhanced
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to accommodate supplemental CAS indexing of exemplified prophetic substances

NEWS 29 SEP 26 WPIDS, WPINDEX, and WPIX coverage of Chinese and and Korean patents enhanced

NEWS 30 SEP 29 IFICLS enhanced with new super search field

NEWS 31 SEP 29 EMBASE and EMBAL enhanced with new search and display fields

NEWS EXPRESS JUNE 27 08 CURRENT WINDOWS VERSION IS V8.3, AND CURRENT DISCOVER FILE IS DATED 23 JUNE 2008.

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=> FILE CASREACT COST IN U.S. DOLLARS

FULL ESTIMATED COST

SINCE FILE TOTAL ENTRY SESSION 0.42 0.42

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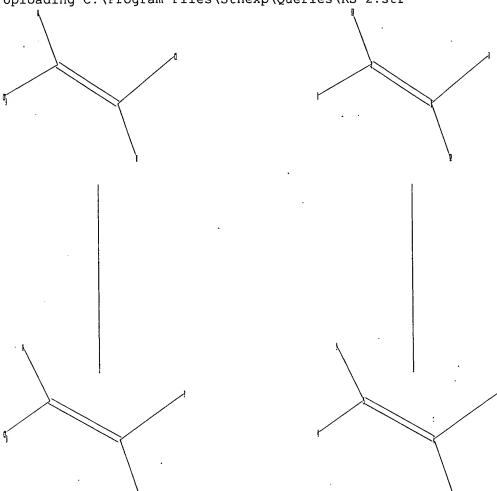
FILE CONTENT:1840 - 28 Sep 2008 VOL 149 ISS 14

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This file contains CAS Registry Numbers for easy and accurate substance identification.

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chain nodes:
1 2 3 4 5 6 7 8 9 10 11 12
chain bonds:
1-2 2-3 2-11 3-7 3-12 4-5 5-6 5-9 6-8 6-10
exact bonds:
1-2 2-3 2-11 3-7 3-12 4-5 5-6 5-9 6-8 6-10

Match level:
1:CLASS 2:CLASS 3:CLASS 4:CLASS 5:CLASS 6:CLASS 7:CLASS 8:CLASS 9:CLASS 10:CLASS 11:CLASS 12:CLASS fragments assigned product role: containing 4 fragments assigned reactant/reagent role: containing 1

L1 STRUCTURE UPLOADED

=> S L1 FULL

FULL SEARCH INITIATED 14:50:20 FILE 'CASREACT'

SCREENING COMPLETE - 2455 REACTIONS TO VERIFY FROM 408 DOCUMENTS

100.0% DONE 2455 VERIFIED 8 HIT RXNS 6 DOCS

SEARCH TIME: 00.00.01

L2 6 SEA SSS FUL L1 ( 8 REACTIONS)

=> D L2 IBIB ABS CRD 1-6

L2 ANSWER 1 OF 6 CASREACT COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 148:33399 CASREACT

TITLE: Preparation of 1,3,3,3-tetrafluoropropene from

1-chloro-3,3,3-trifluoropropene

INVENTOR(S): Hibino, Yasuo; Tamai, Ryoichi; Sakyu, Fuyuhiko

PATENT ASSIGNEE(S): Central Glass Co., Ltd., Japan SOURCE: Jpn. Kokai Tokkyo Koho, 6pp.

CODEN: JKXXAF

DOCUMENT TYPE:

Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO. KIND DATE APPLICATION NO. DATE

JP 2007320896 A 20071213 JP 2006-152089 20060531
PRIORITY APPLN. INFO.: JP 2006-152089 20060531

AB F3CCH:CHF is prepared by fluorination of F3CCH:CHCl with metal fluoride (in presence of a solvent). Thus, 26.1 g F3CCH:CHCl was autoclaved with Clocat F (KF) in DMSO at 150° and 0.9 MPa for 18 h to give 20.1 g products containing F3CCH:CHCl 16.3, trans-F3CCH:CHF 75.9, and cis-F3CCH:CHF 6.4%.

RX(1) OF 1

$$F_3C-CH=CH-C1$$
 KF, DMSO  $F_3C$ 

stereoisomers

NOTE: alternative preparation shown, stereoselective, thermal

CON: 8 hours, 150 deg C, 0.9 MPa

L2 ANSWER 2 OF 6 CASREACT COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 147:502007 CASREACT

TITLE: Preparation of 1,1,1,3,3-pentafluoropropane

(HFC-245fa) by using a SbF5-attached catalyst

AUTHOR(S): Quan, Heng-Dao; Yang, Hui-E.; Tamura, Masanori;

Sekiya, Akira

CORPORATE SOURCE: Tsukuba Central 5-2, National Institute of Advanced

Industrial Science and Technology (AIST), Tsukuba,

Ibaraki, 305-8565, Japan

SOURCE: Journal of Fluorine Chemistry (2007), 128(3), 190-195

CODEN: JFLCAR; ISSN: 0022-1139

PUBLISHER: Elsevier B.V.

DOCUMENT TYPE: Journal English LANGUAGE:

The preparation of HFC-245fa by reaction of 1,1,1,3,3-pentachloropropane and anhydrous HF via two-step vapor-phase catalytic fluorination is described. The antimony pentafluoride catalyst was supported on inert porous materials to improve the catalytic activity. The resulting catalyst not only exhibited high catalytic activity and excellent thermal stability, but also improved the performance of SbF5, in terms of hygroscopicity and corrosion.

RX(2) OF 3

$$F_3C$$
 $C1$ 
 $SbF5$ ,  $HF$ 
 $F_3C-CH_2-CHF_2$  +  $F_3C$ 
 $F_3C-CH_2-CHF_2$  +  $F_3C$ 

NOTE: gas phase, solid-supported catalyst, flow system used,

optimization study, optimized on catalyst, catalyst support and reaction temperature, porous aluminium fluoride based catalyst at 350 deg C gave higher conversion but much lower selectivity on pentafluoro product, porous magnesium fluoride based catalyst support, tubular Inconel reactor used STAGE(1) 80 deg C -> 120 deg C; 1.81 seconds, 120 deg C

REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

ANSWER 3 OF 6 CASREACT COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 146:208362 CASREACT

TITLE: Fluorination catalysts, method for their preparation, and method for producing fluorinated compounds using

the catalysts

INVENTOR(S): Quan, Heng-Dao; Yang, Huie; Tamura, Masanori; Sekiya,

Akira

PATENT ASSIGNEE(S): National Institute of Advanced Industrial Science and

Technology, Japan

SOURCE: U.S. Pat. Appl. Publ., 10pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent LANGUAGE: English

FAMILY ACC. NUM. COUNT:

PATENT INFORMATION:

PATEN	NT NO.	KIND	DATE	APE	PLICATION NO.	DATE
US 20	070027348	A1	20070201	US	2006-456126	20060707
CN 19	911512	Α	20070214	CN	2006-10105441	20060705
JP 20	07038216	Α	20070215	JP	2006-187242	20060706
PRIORITY F	APPLN. INFO.:			JP	2005-199350	20050707
A						

MARPAT 146:208362

The present invention provides a novel fluorination catalyst that has high stability at high temps., is easily regenerated and is superior in catalytic activity and selectivity and a method for the preparation of the fluorination catalyst. The present invention also provides a method for the preparation of a novel fluorinated compound, and particularly, 1,1,1,3,3-pentafluoropropane (HFC-245fa), by using the catalyst. The fluorination catalyst of the present invention is obtained by treating a

> metal salt containing a chromium salt such as chromium oxide with chlorine gas and/or oxygen gas. Examples of the metal salt may include, besides a chromium salt, one or more catalytically active metal salts selected from magnesium salts, aluminum salts, zinc salts, sodium salts, nickel salts, iron salts, cobalt salts, vanadium salts, manganese salts and copper salts.

RX(1) OF 1

NOTE: Alternative preparations gave similar to lower conversions, gas

phase, optimization study, thermal

STAGE(1) room temperature; 4 hours, 400 deg C STAGE(2) 150 deg C CON:

ANSWER 4 OF 6 CASREACT COPYRIGHT 2008 ACS on STN L2

ACCESSION NUMBER: 143:442384 CASREACT

TITLE: Investigation into antimony pentafluoride-based

catalyst in preparing organo-fluorine compounds

Yang, Hui-e; Quan, Heng-dao; Tamura, Masanori; Sekiya, AUTHOR(S):

Akira

CORPORATE SOURCE: National Institute of Advanced Industrial Science and

Technology (AIST), Tsukuba, Ibaraki, 305-8565, Japan

SOURCE: Journal of Molecular Catalysis A: Chemical (2005),

233(1-2), 99-104

CODEN: JMCCF2; ISSN: 1381-1169

PUBLISHER: Elsevier B.V.

DOCUMENT TYPE: Journal LANGUAGE: English

AB Antimony pentafluoride (SbF5)/porous metal fluorides (PMF) were prepared by impregnation of PMF with SbCl5 followed by fluorination with anhydrous hydrogen fluoride (AHF). The PMFs include Al fluoride, Mg fluoride, Ca fluoride, and Cr fluoride, prepared from the corresponding oxides. The SbF5/PMF demonstrates excellent activity as catalyst in vapor-phase fluorination of hydrocarbons and overcomes such drawbacks as hygroscopicity, corrosion, and toxicity that appear when SbF5 is used alone. The SbF5/PMF catalyst system was characterized by x-ray diffraction, XPS, BET surface area measurements, and SEM. The catalytic activity was evaluated in vapor-phased fixed-bed fluorination of chlorinated hydrocarbons.

RX(2) OF 6

F3C-CH=CH-F C:7784-18-1, SbF5, HF  $F_3C-CH=CH-C1$ 39%

> F3C-CH2-CHF2 45%

NOTE: stereoselective, in the vapour-phase CON: 1.7 seconds, 303 deg C  $\,$ 

RX(3) OF 6

 $F_3C-CH=CH-F$ C:7784-18-1, SbF5, HF  $F_3C-CH=CH-C1$ 63%

> F3C-CH2-CHF2 28%

NOTE: stereoselective, in the vapour-phase CON: 1.7 seconds, 350 deg  $C_{\rm c}$ 

REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

ANSWER 5 OF 6 CASREACT COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER:

142:158394 CASREACT

TITLE:

Two-step process for the manufacture of

1,3,3,3-tetrafluoropropene from 1-chloro-3,3,3-

Tung, Hsueh Sung; Johnson, Robert C.; Merkel, Daniel

trifluoropropene

PATENT ASSIGNEE(S): Honeywell International Inc., USA

SOURCE:

U.S. Pat. Appl. Publ., 6 pp.

CODEN: USXXCO

DOCUMENT TYPE:

Patent

LANGUAGE:

INVENTOR(S):

English

FAMILY ACC. NUM. COUNT: 26

PATENT NO.	KIND DATE	ΔΕ	PPLICATION NO.	DATE						
TATENT NO.	KIND DITTE									
US 20050020862	A1 20050	)127 08	3 2003-626997	20030725						
WO 2005012212	A2 20050	)210 WC	WO 2004-US23160 20040721							
WO 2005012212	A3 20050	)331								
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SN, TD, TG
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                                            US 2006-588465
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                                            US 2006-588671
                                                             20061027
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AB 1,3,3,3-Tetrafluoropropene is prepared by: (A) reacting 1-chloro-3,3,3-trifluoropropene with hydrogen fluoride in the vapor phase and in the presence of a fluorination catalyst and under conditions sufficient to form an intermediate product comprising 1-chloro-1,3,3,3-tetrafluoropropane and/or 1,1,1,3,3-pentafluoropropane; and (B) reacting the intermediate product with a caustic solution (e.g., aqueous NaOH) and under conditions sufficient to dehydrochlorinate 1-chloro-1,3,3,3-tetrafluoropropane and/or to dehydrofluorinate 1,1,1,3,3-pentafluoropropane, forming 1,3,3,3-tetrafluoropropene.

RX(4) OF 5 - 2 STEPS

1. SbCl5, HF, Cl2 2. KOH, R:460-73-1, F<sub>3</sub>C-CH-F  $F_3C-CH=CH-C1$ MeCN

NOTE: 1) optimization study, other products also detected CON: STEP(1) 12 seconds, 70 deg C, 45 psi STEP(2) 60 deg C

RX(5) OF 5 - 2 STEPS

 $\frac{1. \text{ SbCl5, HF, Cl2}}{2. \text{ KOH, Water}}$  F<sub>3</sub>C-CH=CH-F  $F_3C-CH=CH-C1$ 

NOTE: 1) optimization study, other products also detected CON: STEP(1) 12 seconds, 70 deg C, 45 psi STEP(2) room temperature

ANSWER 6 OF 6 CASREACT COPYRIGHT 2008 ACS on STN L2

ACCESSION NUMBER: 127:95018 CASREACT

TITLE: Process for producing 1,1,1,3,3-pentafluoropropane by

fluorination of 1,1,1,3,3-pentachloropropane

Nakada, Tatsuo; Aoyama, Hirokazu; Yamamoto, Akinori INVENTOR(S):

Daikin Industries Ltd., Japan PATENT ASSIGNEE(S):

PCT Int. Appl., 18 pp. SOURCE:

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese 1

FAMILY ACC. NUM. COUNT:

PAT	CENT	NO.		KI	ND	DATE	•						0.	DATE			
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BB	9612	297		Δ					B	D 19	96-1	2297		1996	1008		
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	1224			A										1997			
	6018													1998			
									0.								

PRIORITY APPLN. INFO.:

JP 1995-354118 19951229 WO 1996-JP2942 19961008

Characterized is a process for producing 1,1,1,3,3-pentafluoropropane (I) using fluorination catalyst which involves (1) gas-phase reacting 1,1,1,3,3-pentachloropropane with HF to thereby give 1,1,1-trifluoro-3-chloro-2-propene (II); and (2) gas-phase reacting II with HF to thereby give I; wherein II obtained in the first step is fed into the second step after eliminating HCl formed as the byproduct therefrom. Thus, an economical and novel process for producing I, which is an useful as foaming and blowing agents, can be provided in a high yield with a good selectivity.

RX(2) OF 3

 $F_3C-CH=CH-C1$  C:10103-47-6, HF  $F_3C-CH=CH-F$  + 23%

F<sub>3</sub>C- CH<sub>2</sub>- CHF<sub>2</sub>
52%

NOTE: 250.degree., reactant 4 and 5 at 20 and 200 cc/min feeding speed resp.

=>

---Logging off of STN---

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Executing the logoff script...

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COST IN U.S. DOLLARS SINCE FILE TOTAL ENTRY SESSION 154.90 154.48 FULL ESTIMATED COST DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS) SINCE FILE TOTAL ENTRY SESSION -4.50 -4.50 CA SUBSCRIBER PRICE

STN INTERNATIONAL LOGOFF AT 14:50:59 ON 29 SEP 2008

Part A Step 1

Connecting via Winsock to STN

Welcome to STN International! Enter x:x

LOGINID: ssspta1621con

PASSWORD:

TERMINAL (ENTER 1, 2, 3, OR ?):2

* * *	* *	* *	* *	* Welcome to STN International * * * * * * * * *
NEWS	1			Web Page for STN Seminar Schedule - N. America
NEWS		APR	04	STN AnaVist, Version 1, to be discontinued
NEWS	3	APR		WPIDS, WPINDEX, and WPIX enhanced with new
	_			predefined hit display formats
NEWS	4	APR	28	EMBASE Controlled Term thesaurus enhanced
NEWS	5	APR		IMSRESEARCH reloaded with enhancements
NEWS	6	MAY		INPAFAMDB now available on STN for patent family
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NEWS	7	MAY	30	DGENE, PCTGEN, and USGENE enhanced with new homology
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NEWS	8	JUN	06	EPFULL enhanced with 260,000 English abstracts
NEWS	9	JUN		KOREAPAT updated with 41,000 documents
NEWS	10	JUN		USPATFULL and USPAT2 updated with 11-character
				patent numbers for U.S. applications
NEWS	11	JUN	19	CAS REGISTRY includes selected substances from
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NEWS	12	JUN	25	CA/CAplus and USPAT databases updated with IPC
				reclassification data
NEWS	13	JUN	30	AEROSPACE enhanced with more than 1 million U.S.
				patent records
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				options to display authors and affiliated
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NEWS	15	JUN	30	STN on the Web enhanced with new STN AnaVist
				Assistant and BLAST plug-in
NEWS	16	JUN	30	STN AnaVist enhanced with database content from EPFULL
NEWS	17	JUL		CA/CAplus patent coverage enhanced
NEWS	18	JUL	28	EPFULL enhanced with additional legal status
				information from the epoline Register
NEWS		JUL		IFICDB, IFIPAT, and IFIUDB reloaded with enhancements
NEWS	20	JUL		STN Viewer performance improved
NEWS		AUG		INPADOCDB and INPAFAMDB coverage enhanced
NEWS	22	AUG	13	CA/CAplus enhanced with printed Chemical Abstracts
				page images from 1967-1998
NEWS		AUG		CAOLD to be discontinued on December 31, 2008
NEWS		AUG		CAplus currency for Korean patents enhanced
NEWS	25	AUG	25	CA/CAplus, CASREACT, and IFI and USPAT databases
				enhanced for more flexible patent number searching
NEWS	26	AUG	27	CAS definition of basic patents expanded to ensure
				comprehensive access to substance and sequence
				information
NEWS	27	SEP	18	Support for STN Express, Versions 6.01 and earlier,
			0.5	to be discontinued
NEWS	28	SEP	25	CA/CAplus current-awareness alert options enhanced

to accommodate supplemental CAS indexing of exemplified prophetic substances

NEWS 29 SEP 26 WPIDS, WPINDEX, and WPIX coverage of Chinese and and Korean patents enhanced

NEWS 30 SEP 29 IFICLS enhanced with new super search field

NEWS 31 SEP 29 EMBASE and EMBAL enhanced with new search and display fields

NEWS EXPRESS JUNE 27 08 CURRENT WINDOWS VERSION IS V8.3, AND CURRENT DISCOVER FILE IS DATED 23 JUNE 2008.

NEWS HOURS STN Operating Hours Plus Help Desk Availability

NEWS LOGIN Welcome Banner and News Items

NEWS IPC8 For general information regarding STN implementation of IPC 8

Enter NEWS followed by the item number or name to see news on that specific topic.

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FILE 'HOME' ENTERED AT 15:07:59 ON 29 SEP 2008

=> FILE CASREACT COST IN U.S. DOLLARS

SINCE FILE TOTAL ENTRY SESSION 0.21 0.21

FULL ESTIMATED COST

FILE 'CASREACT' ENTERED AT 15:08:20 ON 29 SEP 2008 USE IS SUBJECT TO THE TERMS OF YOUR CUSTOMER AGREEMENT COPYRIGHT (C) 2008 AMERICAN CHEMICAL SOCIETY (ACS)

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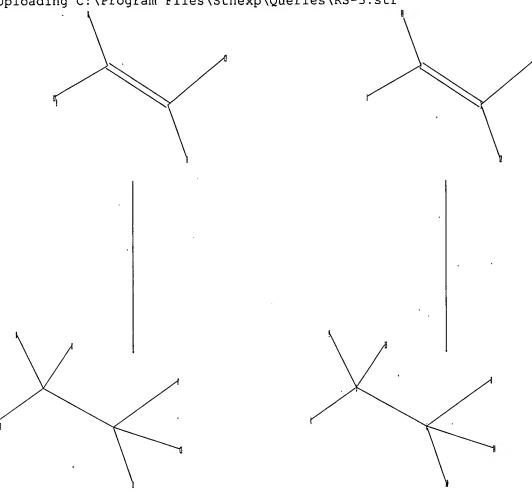
FILE CONTENT: 1840 - 28 Sep 2008 VOL 149 ISS 14

New CAS Information Use Policies, enter HELP USAGETERMS for details.

CASREACT contains reactions from CAS and from: ZIC/VINITI database (1974-1999) provided by InfoChem; INPI data prior to 1986; Biotransformations database compiled under the direction of Professor Dr. Klaus Kieslich; organic reactions, portions copyright 1996-2006 John Wiley & Sons, Ltd., John Wiley and Sons, Inc., Organic Reactions Inc., and Organic Syntheses Inc. Reproduced under license. All Rights Reserved.

This file contains CAS Registry Numbers for easy and accurate substance identification.

=>
Uploading C:\Program Files\Stnexp\Queries\RS-3.str



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1 2 3 4 5 6 7 8 9 10 11 12 13 14
chain bonds:
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Match level:
1:CLASS 2:CLASS 3:CLASS 4:CLASS 5:CLASS 6:CLASS 7:CLASS 8:CLASS 9:CLASS 10:CLASS 11:CLASS 12:CLASS 13:CLASS 14:CLASS fragments assigned product role: containing 4 fragments assigned reactant/reagent role: containing 1

#### L1 STRUCTURE UPLOADED

=> S L1 FULL

FULL SEARCH INITIATED 15:09:10 FILE 'CASREACT'

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100.0% DONE 500 VERIFIED 2 HIT RXNS 2 DOCS

SEARCH TIME: 00.00.01

L2 2 SEA SSS FUL L1 ( 2 REACTIONS)

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L2 ANSWER 1 OF 2 CASREACT COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 142:158394 CASREACT

TITLE: Two-step process for the manufacture of

1,3,3,3-tetrafluoropropene from 1-chloro-3,3,3-

trifluoropropene

INVENTOR(S): Tung, Hsueh Sung; Johnson, Robert C.; Merkel, Daniel

С.

PATENT ASSIGNEE(S): Honeywell International Inc., USA

SOURCE: U.S. Pat. Appl. Publ., 6 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent LANGUAGE: English

FAMILY ACC. NUM. COUNT: 26

PAT	CENT	NO.		KII	ND	DATE			A	PPLI	CATI	ON NO	ο.	DATE			
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ΕP	1658						0524		E	P 20	04-7	7859	5	2004	0721		
US CA CA	1852 2007 2007 2608 2608 1916 R:	0129 327 675 231	27 579	A T A A A	1 1 1 2	2006 2007 2007 2008 2008 2008	0607 0427 0427 0430		U. C. C. E	P 20 S 20 A 20 A 20 P 20	06-5 06-5 07-2 07-2 07-1	2116 8846 6083 6086 1943	2 5 27 75 2	2007	0721 1027 1026 1026 1026		IE,
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1,3,3,3-Tetrafluoropropene is prepared by: (A) reacting 1-chloro-3,3,3trifluoropropene with hydrogen fluoride in the vapor phase and in the presence of a fluorination catalyst and under conditions sufficient to form an intermediate product comprising 1-chloro-1,3,3,3tetrafluoropropane and/or 1,1,1,3,3-pentafluoropropane; and (B) reacting the intermediate product with a caustic solution (e.g., aqueous NaOH) and under conditions sufficient to dehydrochlorinate 1-chloro-1,3,3,3tetrafluoropropane and/or to dehydrofluorinate 1,1,1,3,3pentafluoropropane, forming 1,3,3,3-tetrafluoropropene.

RX(1) OF 5

```
RX(1) OF 5

F_3C-CH=CH-C1 SbC15, HF, C12 F_3C-CH_2-CHF_2+ F_-CH-CH_2-CF_3
```

NOTE: optimization study, other products also detected

CON: 12 seconds, 70 deg C, 45 psi

```
ANSWER 2 OF 2 CASREACT COPYRIGHT 2008 ACS on STN
```

ACCESSION NUMBER: 128:217103 CASREACT

Preparation of 1,1,1,3,3-pentafluoropropane from TITLE:

1-chloro-3,3,3-trifluoropropene

INVENTOR(S): Sakyu, Fuyuhiko; Yoshikawa, Satoshi; Hibino, Yasuo

PATENT ASSIGNEE(S): Central Glass Co., Ltd., Japan Jpn. Kokai Tokkyo Koho, 4 pp. SOURCE:

CODEN: JKXXAF

DOCUMENT TYPE: Patent Japanese LANGUAGE:

FAMILY ACC. NUM. COUNT:

#### PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10072381	Α	19980317	JP 1996-226638	19960828
JP 3164288	В2	20010508		
US 6235951	B1	20010522	US 1996-752879	19961120
PRIORITY APPLN. INFO.	:		JP 1996-5971	19960117
			JP 1996-222004	19960823
			JP 1996-226638	19960828

AB 1,1,1,3,3-Pentafluoropropane (I), useful as blowing agents or refrigerants (no data), is prepared by catalytic addition reaction of HF to 1-chloro-3,3,3-trifluoropropene (II) and catalytic disproportionation of the resulting 1,1,1,3-tetrafluoro-3-chloropropane (III). II (64.1 g) was treated with HF in the presence of SbCl5 at 80° under 6 kg/cm2G for 3 h to give 37.2 g product containing 57.9% I and 10.7% III.

# RX(1) OF 1

$$F_3C-CH=CH-C1$$
 SbC15, HF  $F_3C-CH_2-CHF_2$  +  $F_1CH-CH_2-CF_3$ 

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---Logging off of STN---

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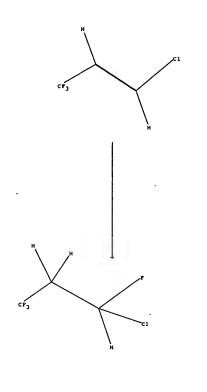
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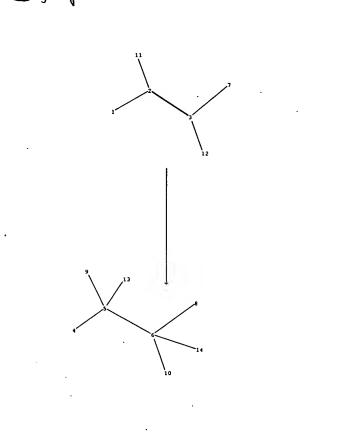
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COST IN U.S. DOLLARS	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED COST	130.44	130.65
DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE ENTRY	TOTAL SESSION
CA SUBSCRIBER PRICE	-1.50	-1.50

STN INTERNATIONAL LOGOFF AT 15:09:48 ON 29 SEP 2008

Pert A; C:\Program Files\Stnexp\Queries\RS-3.str





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chain bonds :
   1-2 2-3 2-11 3-7 3-12
                          4 – 5
                              5-6 5-9
                                        5-13 6-8. 6-10 6-14
exact bonds :
   1-2 2-3 2-11 3-7 3-12
                          4-5 5-6 5-9 5-13 6-8
                                                 6-10 6-14
```

Match level :

1:CLASS 2:CLASS 3:CLASS 4:CLASS 5:CLASS 6:CLASS 7:CLASS 8:CLASS 9:CLASS 10:CLASS 11:CLASS 12:CLASS 13:CLASS 14:CLASS

fragments assigned product role:

containing 4

fragments assigned reactant/reagent role:

containing 1

Connecting via Winsock to STN

Part A Step 2

Welcome to STN International! Enter x:x

LOGINID:ssspta1621con

PASSWORD:

TERMINAL (ENTER 1, 2, 3, OR ?):2

Welcome to STN International Web Page for STN Seminar Schedule - N. America NEWS NEWS APR 04 STN AnaVist, Version 1, to be discontinued 2 NEWS 3 APR 15 WPIDS, WPINDEX, and WPIX enhanced with new predefined hit display formats NEWS APR 28 EMBASE Controlled Term thesaurus enhanced 5 APR 28 IMSRESEARCH reloaded with enhancements NEWS INPAFAMDB now available on STN for patent family NEWS MAY 30 searching NEWS 7 MAY 30 DGENE, PCTGEN, and USGENE enhanced with new homology sequence search option EPFULL enhanced with 260,000 English abstracts NEWS 8 JUN 06 NEWS 9 JUN 06 KOREAPAT updated with 41,000 documents USPATFULL and USPAT2 updated with 11-character NEWS 10 JUN 13 patent numbers for U.S. applications JUN 19 NEWS 11 CAS REGISTRY includes selected substances from web-based collections NEWS 12 JUN 25 CA/CAplus and USPAT databases updated with IPC reclassification data NEWS 13 JUN 30 AEROSPACE enhanced with more than 1 million U.S. patent records NEWS 14 JUN 30 EMBASE, EMBAL, and LEMBASE updated with additional options to display authors and affiliated organizations NEWS 15 JUN 30 STN on the Web enhanced with new STN AnaVist Assistant and BLAST plug-in JUN 30 STN AnaVist enhanced with database content from EPFULL NEWS 16 CA/CAplus patent coverage enhanced NEWS 17 JUL 28 NEWS 18 JUL 28 EPFULL enhanced with additional legal status information from the epoline Register JUL 28 IFICDB, IFIPAT, and IFIUDB reloaded with enhancements NEWS 19 STN Viewer performance improved NEWS 20 JUL 28 INPADOCDB and INPAFAMDB coverage enhanced NEWS 21 AUG 01 CA/CAplus enhanced with printed Chemical Abstracts NEWS 22 AUG 13 page images from 1967-1998 CAOLD to be discontinued on December 31, 2008 NEWS 23 AUG 15 CAplus currency for Korean patents enhanced NEWS 24 AUG 15 CA/CAplus, CASREACT, and IFI and USPAT databases NEWS 25 AUG 25 enhanced for more flexible patent number searching CAS definition of basic patents expanded to ensure NEWS 26 AUG 27 comprehensive access to substance and sequence information Support for STN Express, Versions 6.01 and earlier, NEWS 27 SEP 18

to be discontinued

NEWS 28 SEP 25 CA/CAplus current-awareness alert options enhanced to accommodate supplemental CAS indexing of exemplified prophetic substances

NEWS 29 SEP 26 WPIDS, WPINDEX, and WPIX coverage of Chinese and and Korean patents enhanced

NEWS 30 SEP 29 IFICLS enhanced with new super search field NEWS 31 SEP 29 EMBASE and EMBAL enhanced with new search and display fields

NEWS EXPRESS JUNE 27 08 CURRENT WINDOWS VERSION IS V8.3,
AND CURRENT DISCOVER FILE IS DATED 23 JUNE 2008.

NEWS HOURS STN Operating Hours Plus Help Desk Availability
NEWS LOGIN Welcome Banner and News Items
NEWS IPC8 For general information regarding STN implementation of IPC 8

The NEW Colleged by the item number on new to see your or their

Enter NEWS followed by the item number or name to see news on that specific topic.

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FILE 'HOME' ENTERED AT 15:15:02 ON 29 SEP 2008

=> FILE CASREACT
COST IN U.S. DOLLARS

SINCE FILE TOTAL ENTRY SESSION 0.21 0.21

FULL ESTIMATED COST

FILE 'CASREACT' ENTERED AT 15:15:51 ON 29 SEP 2008 USE IS SUBJECT TO THE TERMS OF YOUR CUSTOMER AGREEMENT COPYRIGHT (C) 2008 AMERICAN CHEMICAL SOCIETY (ACS)

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FILE CONTENT: 1840 - 28 Sep 2008 VOL 149 ISS 14

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license. All Rights Reserved.

This file contains CAS Registry Numbers for easy and accurate substance identification.

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Uploading C:\Program Files\Stnexp\Queries\RS-4.str

L1 STRUCTURE UPLOADED

=> S L1 FULL

FULL SEARCH INITIATED 15:16:32 FILE 'CASREACT'

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100.0% DONE 631 VERIFIED 3 HIT RXNS 2 DOCS

SEARCH TIME: 00.00.01

L2 2 SEA SSS FUL L1 ( 3 REACTIONS)

=> D L2 IBIB ABS CRD 1-2

L2 ANSWER 1 OF 2 CASREACT COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 147:52627 CASREACT

TITLE: Catalytic dehydrohalogenation method for producing

fluoroalkenes from fluorohaloalkanes

INVENTOR(S): Mukhopadhyay, Sudip; Nair, Haridasan K.; Tung, Hsueh

S.; Van Der Puy, Michael; Singh, Rajiv R.; Wang,

Haiyou; Johnson, Robert C.

PATENT ASSIGNEE(S): Honeywell International Inc., USA

SOURCE: U.S. Pat. Appl. Publ., 7pp., Cont.-in-part of U.S.

Ser. No. 118,503.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 26

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US 7345209		20031103	05 2003-116303	20030429
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US 20060030744	A1	20060209	US 2005-118530	20050429
US 7189884	В2	20070313		
EP 1740518	A1	20070110	EP 2005-740929	20050429
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                                            US 2006-588671
                                                              20061027
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OTHER SOURCE(S): MARPAT 147:52627

AB A dehydrohalogenation (e.g., dehydrofluorination) method for producing fluoroalkenes (e.g., cis- and trans-1,3,3,3-tetrafluoropropylene) from fluorohaloalkanes (e.g., 1,1,1,3,3-pentafluoropropane) in the presence of a Ni catalyst (e.g., Ni/C) is described.

RX(3) OF 4

$$\begin{array}{c|c}
C1 \\
| & \\
F-CH-CH_2-CF_3
\end{array}
\xrightarrow{Ni} F_3C-CH=CH-E$$

NOTE: Optimized on catalyst, time and temperature, gas phase,

optimization study, thermal 15 hours, 515 deg C

CON:

RX(4) OF 4

$$F-CH-CH_2-CF_3$$
 $KOH, 18-Crown-6, F_3C-CH=CH-F$ 
Water 55%

CON: 6 hours, 50 deg C

ANSWER 2 OF 2 CASREACT COPYRIGHT 2008 ACS on STN

142:158394 CASREACT ACCESSION NUMBER:

Two-step process for the manufacture of TITLE:

1,3,3,3-tetrafluoropropene from 1-chloro-3,3,3-

trifluoropropene

Tung, Hsueh Sung; Johnson, Robert C.; Merkel, Daniel INVENTOR(S):

PATENT ASSIGNEE(S): Honeywell International Inc., USA

U.S. Pat. Appl. Publ., 6 pp. SOURCE:

CODEN: USXXCO

DOCUMENT TYPE: Patent LANGUAGE: English

FAMILY ACC. NUM. COUNT: 26

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10/626,997 09/29/2008
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             AL, BA, HR, MK, RS
                              20080430
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     WO 2008057794
                        Α1
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             CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI,
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PRIORITY APPLN. INFO.:
                                              US 2003-626997
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                                                                20060127
                                              US 2006-588464
                                                                20061027
                                              US 2006-588465
                                                                20061027
                                              US 2006-588671
                                                                20061027
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AB 1,3,3,3-Tetrafluoropropene is prepared by: (A) reacting 1-chloro-3,3,3-trifluoropropene with hydrogen fluoride in the vapor phase and in the presence of a fluorination catalyst and under conditions sufficient to form an intermediate product comprising 1-chloro-1,3,3,3-tetrafluoropropane and/or 1,1,1,3,3-pentafluoropropane; and (B) reacting the intermediate product with a caustic solution (e.g., aqueous NaOH) and under conditions sufficient to dehydrochlorinate 1-chloro-1,3,3,3-tetrafluoropropane and/or to dehydrofluorinate 1,1,1,3,3-pentafluoropropane, forming 1,3,3,3-tetrafluoropropene.

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RX(3) OF 5

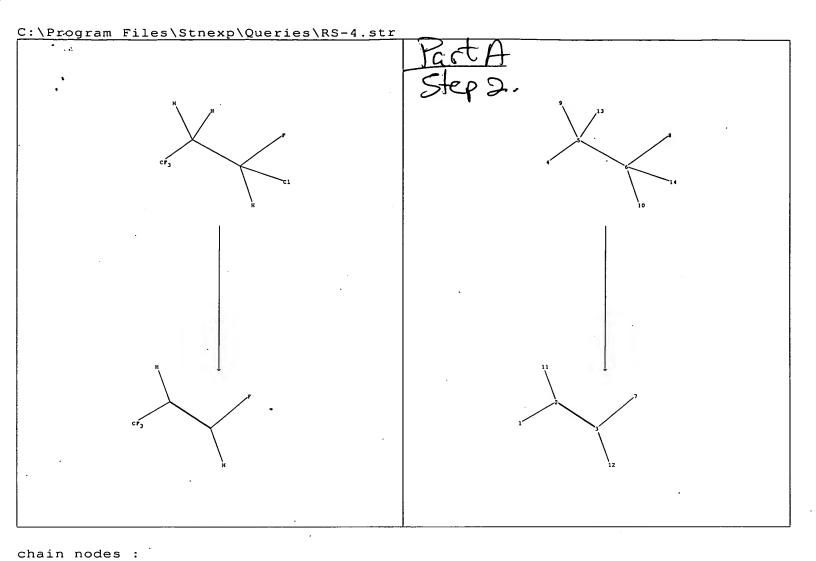
C1

F-CH-CH<sub>2</sub>-CF<sub>3</sub>

KOH, R:460-73-1, MeCN

F<sub>3</sub>C-CH=CH-F

CON: 60 deg C
```



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chain bonds:
    1-2 2-3 2-11 3-7 3-12 4-5 5-6 5-9 5-13 6-8 6-10 6-14

exact bonds:
    1-2 2-3 2-11 3-7 3-12 4-5 5-6 5-9 5-13 6-8 6-10 6-14
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Match level:
 1:CLASS 2:CLASS 3:CLASS 4:CLASS 5:CLASS 6:CLASS 7:CLASS 8:CLASS 9:CLASS 10:CLASS 11:CLASS 12:CLASS 13:CLASS 14:CLASS fragments assigned product role:
 containing 1
fragments assigned reactant/reagent role:
 containing 4

Part B Step 2.

10/626,997 09/29/2008

Connecting via Winsock to STN

Welcome to STN International! Enter x:x

LOGINID:ssspta1621con

PASSWORD:

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NEWS	4	APR	28	EMBASE Controlled Term thesaurus enhanced
NEWS	5	APR		IMSRESEARCH reloaded with enhancements
NEWS	6	MAY		INPAFAMDB now available on STN for patent family
110110	•		30	searching
NEWS	7	MAY	30	DGENE, PCTGEN, and USGENE enhanced with new homology
NEWS	,	IIII	50	sequence search option
NEWS	8	JUN	06	EPFULL enhanced with 260,000 English abstracts
NEWS	9	JUN		KOREAPAT updated with 41,000 documents
NEWS		JUN		USPATFULL and USPAT2 updated with 11-character
NEWS	10	JUN	13	patent numbers for U.S. applications
NEWS	11	JUN	10	CAS REGISTRY includes selected substances from
NEWS	TT	JUN	19	web-based collections
	10	TIINI	2.5	CA/CAplus and USPAT databases updated with IPC
NEWS	12	JUN	25	reclassification data
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NEWS	13	JUN	30	
MENO:	3.4	T1131	20	patent records EMBASE, EMBAL, and LEMBASE updated with additional
NEWS.	14	JUN	30	options to display authors and affiliated
MOLIO	1 -	T1131	20	organizations
NEWS	15	JUN	30	STN on the Web enhanced with new STN AnaVist
			2.0	Assistant and BLAST plug-in
NEWS		JUN		STN AnaVist enhanced with database content from EPFULL
NEWS		JUL		CA/CAplus patent coverage enhanced
NEWS	18	JUL	28	EPFULL enhanced with additional legal status
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NEWS		JUL		IFICDB, IFIPAT, and IFIUDB reloaded with enhancements
NEWS		JUL		STN Viewer performance improved
NEWS		AUG		INPADOCDB and INPAFAMDB coverage enhanced
NEWS	22	AUG	13	CA/CAplus enhanced with printed Chemical Abstracts
				page images from 1967-1998
NEWS		AUG		CAOLD to be discontinued on December 31, 2008
NEWS		AUG		CAplus currency for Korean patents enhanced
NEWS	25	AUG	25	CA/CAplus, CASREACT, and IFI and USPAT databases
				enhanced for more flexible patent number searching
NEWS	26	AUG	27	CAS definition of basic patents expanded to ensure
				comprehensive access to substance and sequence
				information
NEWS	27	SEP	18	Support for STN Express, Versions 6.01 and earlier,
				to be discontinued
NEWS	28	SEP	25	CA/CAplus current-awareness alert options enhanced

to accommodate supplemental CAS indexing of exemplified prophetic substances

NEWS 29 SEP 26 WPIDS, WPINDEX, and WPIX coverage of Chinese and and Korean patents enhanced

NEWS 30 SEP 29 IFICLS enhanced with new super search field

NEWS 31 SEP 29 EMBASE and EMBAL enhanced with new search and display fields

NEWS EXPRESS JUNE 27 08 CURRENT WINDOWS VERSION IS V8.3, AND CURRENT DISCOVER FILE IS DATED 23 JUNE 2008.

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FILE 'HOME' ENTERED AT 17:26:58 ON 29 SEP 2008

=> FILE CASREACT COST IN U.S. DOLLARS

SINCE FILE TOTAL ENTRY SESSION 0.21 0.21

FULL ESTIMATED COST

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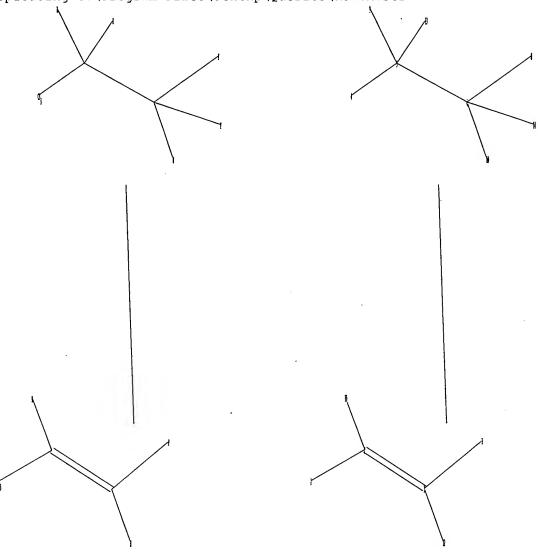
New CAS Information Use Policies, enter HELP USAGETERMS for details.

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This file contains CAS Registry Numbers for easy and accurate substance identification.  $\dot{}$ 

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chain nodes:
1 2 3 4 5 6 7 8 9 10 11 12 13 14
chain bonds:
1-2 2-3 2-11 3-7 3-12 4-5 5-6 5-9 5-13 6-8 6-10 6-14
exact bonds:
1-2 2-3 2-11 3-7 3-12 4-5 5-6 5-9 5-13 6-8 6-10 6-14

Match level :

1:CLASS 2:CLASS 3:CLASS 4:CLASS 5:CLASS 6:CLASS 7:CLASS 8:CLASS 9:CLASS 10:CLASS 11:CLASS 12:CLASS 13:CLASS 14:CLASS fragments assigned product role: containing 1 fragments assigned reactant/reagent role: containing 4

STRUCTURE UPLOADED

=> S L1 FULL

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SCREENING COMPLETE -3964 REACTIONS TO VERIFY FROM 686 DOCUMENTS

100.0% DONE

3964 VERIFIED 10 HIT RXNS 7 DOCS

SEARCH TIME: 00.00.01

L27 SEA SSS FUL L1 ( 10 REACTIONS)

=> D L2 IBIB ABS CRD 1-7

ANSWER 1 OF 7 CASREACT COPYRIGHT 2008 ACS on STN L2

KIND DATE

ACCESSION NUMBER: 148:519340 CASREACT

Geometric isomerization of halogenated olefins TITLE:

Wang, Haiyou; Tung, Hsueh Sung INVENTOR(S): Honeywell International Inc., USA PATENT ASSIGNEE(S):

U.S. Pat. Appl. Publ., 6pp. SOURCE:

CODEN: USXXCO

DOCUMENT TYPE:

Patent LANGUAGE: English

FAMILY ACC. NUM. COUNT:

PATENT INFORMATION:

PATENT NO.

	US	2008	0103	342	Α	1	2008	0501		U:	3 20	06-5	88466	5	2006	1027		
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															SE,			
			AL,	BA,	HR,	MK,	RS								,			
	CA	2608						0427		C	A 20	07-2	60861	L 1	2007	1026		
		1011									1 20	07-1	01999	957	2007	1026		
	KR	2008	0380	73	А		2008	0502		K	R 20	07-1	09197	7	2007	1029		
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APPLICATION NO.

DATE

#### RX(1) OF 1

$$F_3C$$
 +  $F_3C$  -  $CH_2$  -  $CHF_2$   $Cr2O3$   $F_3C$ 

NOTE: Optimized on temperature, gas phase, optimization study

CON: 100 deg C

ANSWER 2 OF 7 CASREACT COPYRIGHT 2008 ACS on STN L2

ACCESSION NUMBER:

148:287184 CASREACT

TITLE:

Production of hfo trans-1234ze from hfc-245fa

INVENTOR(S): PATENT ASSIGNEE(S):

Wang, Haiyou; Tung, Hsueh Sung Honeywell International Inc., USA

U.S. Pat. Appl. Publ., 8pp.

SOURCE:

CODEN: USXXCO

DOCUMENT TYPE:

Patent

LANGUAGE:

English

FAMILY ACC. NUM. COUNT:

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATIO	N NO.	DATE
US 20080051611	A1	20080228	US 2007-77	5318	20070710
CA 2598386	A1	20080224	CA 2007-25	98386	20070823
CN 101265155	Α	20080917	CN 2007-10	185757	20070823
KR 2008018851	Α	20080228	KR 2007-85	689	20070824
JP 2008150356	Α	20080703	JP 2007-21	8239	20070824
PRIORITY APPLN. INFO.	:		US 2006-83	9873P	20060824
			US 2007-77	5318	20070710

The manufacture of the HFO trans-1,3,3,3-tetrafluoropropene (HFO trans-1234ze) AB is shown. More particularly, a process for the manufacture of the HFO trans-1234ze occurs by first dehydrofluorinating 1,1,1,3,3pentafluoropropane to produce a mixture of cis-1,3,3,3-tetrafluoropropene, trans-1,3,3,3-tetrafluoropropene, and HF. Then optionally recovering HF and then recovering trans-1, 3, 3, 3-tetrafluoropropene.

# RX(1) OF 1

$$F_3C-CH_2-CHF_2$$
  $C:7784-18-1,$   $F_3C$ 

stereoisomers

NOTE: Optimized on catalyst, gas phase, optimization study,

stereoselective, thermal

CON: 350 deg C

ANSWER 3 OF 7 CASREACT COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER:

148:287183 CASREACT

TITLE:

Integrated HFC trans-1234ze manufacture process

INVENTOR(S):

Wang, Haiyou; Tung, Hsueh Sung; Chiu, Yuon; Cerri,

Gustavo; Cottrell, Stephen A.

PATENT ASSIGNEE(S):

Honeywell International Inc., USA

SOURCE:

U.S. Pat. Appl. Publ., 7pp.

09/29/200829/09/2008 Page 5

09/29/2008 10/626,997

CODEN: USXXCO

DOCUMENT TYPE: LANGUAGE:

Patent English

FAMILY ACC. NUM. COUNT:

PATENT INFORMATION:

APPLICATION NO. PATENT NO. KIND DATE DATE ----------20080228 US 2007-657354 20070124 US 20080051610 A1 CA 2007-2598382 20070823 CA 2598382 A1 20080224 EP 1900716 EP 2007-253337 20070823 A1 20080319 R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LI, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR, AL, BA, HR, MK, YU JP 2008069147 Α 20080327 JP 2007-216914 20070823 .20080228 KR 2007-85594 KR 2008018847 Α 20070824 PRIORITY APPLN. INFO.: US 2006-839874P 20060824

An integrated process for the manufacture of HFO trans-1,3,3,3-AB tetrafluoropropene (HFO trans-1234ze) by first catalytically dehydrofluorinating 1,1,1,3,3-pentafluoropropane to produce a mixture of cis-1,3,3,3-tetrafluoropropene, trans-1,3,3,3-tetrafluoropropene, and HF. Then optionally recovering HF, catalytically isomerizing cis-1234ze into trans-1234ze, and recovering trans-1,3,3,3-tetrafluoropropene.

RX(1) OF 1

$$F_3C-CH_2-CHF_2$$
  $C:7784-18-1$ ,  $F_3C$ 

stereoisomers

US 2007-657354 20070124

NOTE: Optimized on catalyst and temperature, Cis product was

isomerized to the trans product, gas phase, optimization study,

stereoselective

CON: 350 deg C

ANSWER 4 OF 7 CASREACT COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER:

148:54624 CASREACT

TITLE:

Method for producing 1,3,3,3-tetrafluoropropene by

dehydrofluorination of 1,1,1,3,3-pentafluoropropane

INVENTOR(S):

Sakyu, Fuyuhiko; Hibino, Yasuo

PATENT ASSIGNEE(S):

Central Glass Company, Limited, Japan

SOURCE:

PCT Int. Appl., 16pp.

DOCUMENT TYPE:

CODEN: PIXXD2

Patent Japanese

LANGUAGE:

FAMILY ACC. NUM. COUNT:

PAS	rent	NO.		KI	ND :	DATE			A:	PPLI	CATIO	ои ис	Э.	DATE			
WO	2007	1451	71	A.	1 :	2007	1221		W	20	07-J	P617	41	2007	0611		
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RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW

RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, PU, TI, TM

BY, KG, KZ, MD, RU, TJ, TM

· JP 2008019243 Α 20080131 JP 2007-146981 20070601 JP 2006-163485 PRIORITY APPLN. INFO.: 20060613

Disclosed is a process for the preparation of 1,3,3,3-tetrafluoropropene, characterized by dehydrofluorination of 1,1,1,3,3-pentafluoropropane in the presence of a zirconium compound, which is supported on a metal oxide or an activated carbon. For example, a zirconium catalyst (40 mL) was purged with N2 in a rate of 200 mL/min while heating to  $300^{\circ}$ , and then hydrogen fluoride was supplied in a rate of 0.2 g/min for 1 h. To the resulting mixture was added gaseous 1,1,1,3,3-pentafluoropropane in a rate of 0.15 g/min for 1 h. The obtained gas was analyzed by GC to show the composition of 1,1,1,3,3-pentafluoropropane (5.88%), 1,3,3,3-trtafluoropropene (trans (75.48%) and cis (17.70%)) and 3,3,3-trifluoropropyne (0.47%) (94.02% conversion rate and 99.11% selectivity). Wherein, the zirconium catalyst was prepd by (1) treatment of ZrOCl2·8H2O (4.5 g) in ethanol with alumina (50 mL) overnight followed by removal of solvent and drying under reduced pressure at 150° (2) exposure of residue (zirconium compound supported on alumina) to N2 containing hydrogen fluoride at  $200^{\circ}$  and heating at  $450^{\circ}$  for 1 h.

RX(1) OF 1

HF F3C-CH CH-F F3C-CH2-CHF2

NOTE: alternative preparation shown, Zr used as a catalyst, thermal

CON: 1 hour, 300 deg C

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

ANSWER 5 OF 7 CASREACT COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER:

147:52627 CASREACT

TITLE:

Catalytic dehydrohalogenation method for producing

fluoroalkenes from fluorohaloalkanes

INVENTOR(S):

Mukhopadhyay, Sudip; Nair, Haridasan K.; Tung, Hsueh

S.; Van Der Puy, Michael; Singh, Rajiv R.; Wang,

Haiyou; Johnson, Robert C.

PATENT ASSIGNEE(S):

Honeywell International Inc., USA

SOURCE:

U.S. Pat. Appl. Publ., 7pp., Cont.-in-part of U.S.

Ser. No. 118,503.

CODEN: USXXCO

DOCUMENT TYPE:

Patent

LANGUAGE:

English

FAMILY ACC. NUM. COUNT: . 26

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US	20050245773	A1	20051103	US 2005-118503	20050429
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    EP 1916231
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             AL, BA, HR, MK, RS
    EP 1916232
                      A1 20080430
                                          EP 2007-119443 20071026
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             AL, BA, HR, MK, RS
                      A1 20080515
                                           WO 2007-US82601 20071026
    WO 2008057794
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PRIORITY APPLN. INFO.:
                                                            20040429
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                                            WO 2005-US14950
                                                             20050429
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> WO 2005-US15124 20050429 US 2005-733355P 20051103 US 2006-588464 20061027 US 2006-588465 20061027 US 2006-588671 20061027

OTHER SOURCE(S): MARPAT 147:52627

A dehydrohalogenation (e.g., dehydrofluorination) method for producing fluoroalkenes (e.g., cis- and trans-1,3,3,3-tetrafluoropropylene) from fluorohaloalkanes (e.g., 1,1,1,3,3-pentafluoropropane) in the presence of a Ni catalyst (e.g., Ni/C) is described.

RX(1) OF 4

$$F_3C-CH_2-CHF_2$$
 Ni  $F_3C-CH=CH-F$ 

NOTE: Optimized on catalyst, time and temperature, gas phase,

optimization study, thermal 15 hours, 515 deg C

CON:

RX(2) OF 4

$$F_3C-CH_2-CHF_2$$
 Ni, Al203

stereoisomers

NOTE: gas phase, thermal CON: 15 hours, 515 deg C

ANSWER 6 OF 7 CASREACT COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER:

144:490632 CASREACT

TITLE:

Processes for production and purification of

hydrofluoroolefins

INVENTOR(S):

Miller, Ralph Newton; Nappa, Mario Joseph; Rao, Velliyur Nott Mallikarjuna; Sievert, Allen Capron

PATENT ASSIGNEE(S):

SOURCE:

U.S. Pat. Appl. Publ., 27 pp., Cont.-in-part of U.S.

Ser. No. 259,901. CODEN: USXXCO

DOCUMENT TYPE:

Patent

LANGUAGE:

English

FAMILY ACC. NUM. COUNT:

PATENT NO.	KIND	IND DATE '		APPLICATION NO.				DATE				
US 200601062	63 A1	2006051	3	U	S 200	05-2	6418	3	2005	1101		
US 200600949	11 A1	2006050	1	U	S 200	05-2	5990:	1	2005	1027		
EP 1805124	A2	2007071	l	E	P 200	05-8	1955	7	2005	1028		
R: AT,	BE, BG, C	H, CY, CZ,	DE,	DK,	EE,	ES,	FΙ,	FR,	GB,	GR,	ΗU,	ΙE,
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BA,	HR, MK, Y	U										
JP 200851893	8 Т	2008060	5	J.	P 200	07-5	3922	)	2005	1028		
WO 200705317	8 A1	2007051	)	W	200	06-U	S133	61	20060	0411		
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09/29/2008 10/626,997

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VN, YU, ZA, ZM, ZW

RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,

KG, KZ, MD, RU, TJ, TM

EP 1960336 A1 20080827 EP 2006-740830 20060411

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CN 101133008 20080227 CN 2005-80037557 20070429 Α IN 2008DN03345 Α 20080704 IN 2008-DN3345 20080423 KR 2008066844 Α 20080716 KR 2008-713217 20080530

PRIORITY APPLN. INFO.:

US 2004-623210P 20041029 US 2005-259901 20051027 WO 2005-US39169 20051028 US 2005-264183 20051101 WO 2006-US13361 20060411

AΒ Hydrofluoroolefins are produced by dehydrofluorination of hydrofluorocarbons containing  $\geq 1$  H and  $\geq 1$  F on adjacent carbons, with the product mixture containing ≥1 of the hydrofluoroolefin and unreacted hydrofluorocarbon as an azeotrope with HF. The product mixts. are separated by distilling off the azeotropic or near-azeotropic mixture containing HF

and hydrofluoroolefins and distilling this mixture in 2 steps at different pressures to sep. the components.

RX(1) OF 8

$$F_3C-CH_2-CHF_2 \longrightarrow F_3C-CH-F$$

NOTE: flow system, porous carbonaceous material was used as catalyst, tube reactor was used, gas phase, optimization study, thermal

CON: 350 deg C

ANSWER 7 OF 7 CASREACT COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER:

142:158394 CASREACT

TITLE:

Two-step process for the manufacture of

1,3,3,3-tetrafluoropropene from 1-chloro-3,3,3-

trifluoropropene

INVENTOR(S):

Tung, Hsueh Sung; Johnson, Robert C.; Merkel, Daniel

PATENT ASSIGNEE(S):

Honeywell International Inc., USA

SOURCE: U.S. Pat. Appl. Publ., 6 pp.

CODEN: USXXCO

DOCUMENT TYPE:

Patent

LANGUAGE:

English

FAMILY ACC. NUM. COUNT:

26

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20050020862 WO 2005012212	A1 A2	20050127 20050210	US 2003-626997 WO 2004-US23160	20030725 20040721
WO 2005012212	Δ3	20050331		

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10/626,997 09/29/2008
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PRIORITY APPLN. INFO.:
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                                                                  20060127
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                                               US 2006-588465
                                                                  20061027
                                               US 2006-588671
                                                                  20061027
     1,3,3,3-Tetrafluoropropene is prepared by: (A) reacting 1-chloro-3,3,3-
```

AB 1,3,3,3-Tetrafluoropropene is prepared by: (A) reacting 1-chloro-3,3,3-trifluoropropene with hydrogen fluoride in the vapor phase and in the presence of a fluorination catalyst and under conditions sufficient to form an intermediate product comprising 1-chloro-1,3,3,3-tetrafluoropropane and/or 1,1,1,3,3-pentafluoropropane; and (B) reacting the intermediate product with a caustic solution (e.g., aqueous NaOH) and under

conditions sufficient to dehydrochlorinate 1-chloro-1,3,3,3-tetrafluoropropane and/or to dehydrofluorinate 1,1,1,3,3-pentafluoropropane, forming 1,3,3,3-tetrafluoropropene.

RX(2) OF 5

 $F_3C-CH_2-CHF_2$  KOH, Water  $F_3C-CH=CH-F$ 

CON: room temperature

RX(3) OF 5

CON: 60 deg C

RX(4) OF 5 - 2 STEPS

$$F_3C-CH=CH-C1$$

$$1. SbC15, HF, C12$$

$$2. KOH, R:460-73-1, F_3C-CH=CH-F$$
MeCN

NOTE: 1) optimization study, other products also detected CON: STEP(1) 12 seconds, 70 deg C, 45 psi STEP(2) 60 deg C

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---Logging off of STN---

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Executing the logoff script...

=> LOG Y

COST IN U.S. DOLLARS	SINCE FILE	TOTAL
	ENTRY	SESSION
FULL ESTIMATED COST	162.33	162.54
DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE ENTRY	TOTAL SESSION
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STN INTERNATIONAL LOGOFF AT 17:31:03 ON 29 SEP 2008

Part B Step 1

Connecting via Winsock to STN

Welcome to STN International! Enter x:x

LOGINID:ssspta1621con

PASSWORD:

TERMINAL (ENTER 1, 2, 3, OR ?):2

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NEWS		APR	0.4	STN AnaVist, Version 1, to be discontinued
NEWS				WPIDS, WPINDEX, and WPIX enhanced with new
MENO	3	ALI	13	predefined hit display formats
NEWS	4	APR	28	EMBASE Controlled Term thesaurus enhanced
NEWS				IMSRESEARCH reloaded with enhancements
NEWS	6	MAY		INPAFAMDB now available on STN for patent family
NEWS	U	LIMI	30	searching .
NEWS	7	MAY	30	DGENE, PCTGEN, and USGENE enhanced with new homology
NEWS	'	IMI	30	sequence search option
NEWS	8	JUN	06	EPFULL enhanced with 260,000 English abstracts
	9	JUN		KOREAPAT updated with 41,000 documents
NEWS	-	JUN		USPATFULL and USPAT2 updated with 11-character
NEWS	10	JUN	13	patent numbers for U.S. applications
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NEWS	TT	JUN	19	web-based collections
NEWS	1.0	TIM	25	CA/CAplus and USPAT databases updated with IPC
NEWS	12	JUN	25	reclassification data
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NEWS	13	JUN	30	patent records
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NEWS	14	JUN	30	options to display authors and affiliated
				organizations
NEGO	1 =	TIINI	20	STN on the Web enhanced with new STN AnaVist
NEWS	15	JUN	30	Assistant and BLAST plug-in
MEMO	1.0	TIINI	20	STN AnaVist enhanced with database content from EPFULL
NEWS		JUN JUL		CA/CAplus patent coverage enhanced
NEWS				EPFULL enhanced with additional legal status
NEWS	18	JUL	20	information from the epoline Register
MEGG	1.0	JUL	20	IFICDB, IFIPAT, and IFIUDB reloaded with enhancements
NEWS		JUL		STN Viewer performance improved
NEWS				INPADOCDB and INPAFAMDB coverage enhanced
NEWS		AUG AUG		
NEWS	22	AUG	13	CA/CAplus enhanced with printed Chemical Abstracts page images from 1967-1998
MEMO	22	7110	1 6	CAOLD to be discontinued on December 31, 2008
NEWS NEWS		AUG AUG		CAPIUS currency for Korean patents enhanced
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NEWS	25	AUG	25	enhanced for more flexible patent number searching
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NEWS	20	AUG	21	comprehensive access to substance and sequence
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いたがつ	21	SEP	то	to be discontinued
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to accommodate supplemental CAS indexing of exemplified prophetic substances

NEWS 29 SEP 26 WPIDS, WPINDEX, and WPIX coverage of Chinese and and Korean patents enhanced

NEWS 30 SEP 29 IFICLS enhanced with new super search field

NEWS 31 SEP 29 EMBASE and EMBAL enhanced with new search and display fields

NEWS EXPRESS JUNE 27 08 CURRENT WINDOWS VERSION IS V8.3, AND CURRENT DISCOVER FILE IS DATED 23 JUNE 2008.

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FILE 'HOME' ENTERED AT 17:16:01 ON 29 SEP 2008

=> FILE CASREACT COST IN U.S. DOLLARS

SINCE FILE TOTAL ENTRY SESSION 0.21 0.21

FULL ESTIMATED COST

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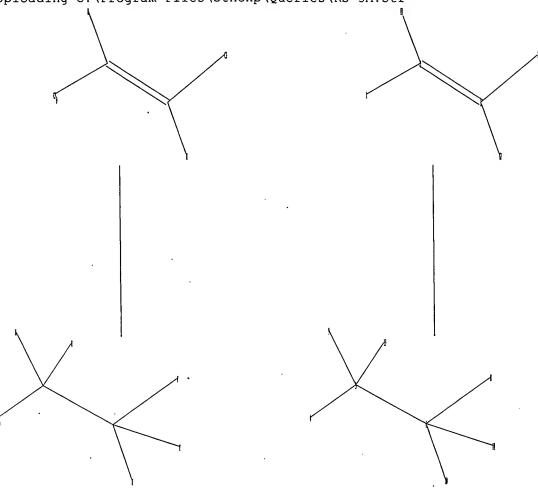
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CASREACT contains reactions from CAS and from: ZIC/VINITI database (1974-1999) provided by InfoChem; INPI data prior to 1986; Biotransformations database compiled under the direction of Professor Dr. Klaus Kieslich; organic reactions, portions copyright 1996-2006 John Wiley & Sons, Ltd., John Wiley and Sons, Inc., Organic Reactions Inc., and Organic Syntheses Inc. Reproduced under license. All Rights Reserved.

This file contains CAS Registry Numbers for easy and accurate substance identification.

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exact bonds :
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Match level:
1:CLASS 2:CLASS 3:CLASS 4:CLASS 5:CLASS 6:CLASS 7:CLASS 8:CLASS 9:CLASS 10:CLASS 11:CLASS 12:CLASS 13:CLASS 14:CLASS fragments assigned product role:
containing 4
fragments assigned reactant/reagent role:
containing 1

L1STRUCTURE UPLOADED

=> S L1 FULL

FULL SEARCH INITIATED 17:17:21 FILE 'CASREACT'

5403 REACTIONS TO VERIFY FROM 932 DOCUMENTS. SCREENING COMPLETE -

100.0% DONE 5403 VERIFIED 13 HIT RXNS 12 DOCS

SEARCH TIME: 00.00.01

L212 SEA SSS FUL L1 ( 13 REACTIONS)

=> D L2 IBIB ABS CRD 1-12

ANSWER 1 OF 12 CASREACT COPYRIGHT 2008 ACS on STN L2

147:502007 CASREACT ACCESSION NUMBER:

Preparation of 1,1,1,3,3-pentafluoropropane TITLE:

(HFC-245fa) by using a SbF5-attached catalyst

Quan, Heng-Dao; Yang, Hui-E.; Tamura, Masanori; AUTHOR(S):

Sekiya, Akira

Tsukuba Central 5-2, National Institute of Advanced CORPORATE SOURCE:

Industrial Science and Technology (AIST), Tsukuba,

Ibaraki, 305-8565, Japan

Journal of Fluorine Chemistry (2007), 128(3), 190-195 SOURCE:

CODEN: JFLCAR; ISSN: 0022-1139

PUBLISHER: Elsevier B.V.

DOCUMENT TYPE: Journal LANGUAGE: English

The preparation of HFC-245fa by reaction of 1,1,1,3,3-pentachloropropane and anhydrous HF via two-step vapor-phase catalytic fluorination is described. The antimony pentafluoride catalyst was supported on inert porous materials to improve the catalytic activity. The resulting catalyst not only exhibited high catalytic activity and excellent thermal stability, but also improved the performance of SbF5, in terms of hygroscopicity and corrosion.

RX(2) OF 3 SbF5, HF F3C-CH2-CHF2 + F3C

stereoisomers

NOTE: gas phase, solid-supported catalyst, flow system used, optimization study, optimized on catalyst, catalyst support and reaction temperature, porous aluminium fluoride based catalyst at 350 deg C gave higher conversion but much lower selectivity on pentafluoro product, porous magnesium fluoride based catalyst support, tubular Inconel reactor used
CON: STAGE(1) 80 deg C -> 120 deg C; 1.81 seconds, 120 deg C

THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS REFERENCE COUNT: 23 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

ANSWER 2 OF 12 CASREACT COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 146:208362 CASREACT

Fluorination catalysts, method for their preparation, TITLE: and method for producing fluorinated compounds using

the catalysts

Quan, Heng-Dao; Yang, Huie; Tamura, Masanori; Sekiya, INVENTOR(S):

Akira

PATENT ASSIGNEE(S): National Institute of Advanced Industrial Science and

Technology, Japan

SOURCE: U.S. Pat. Appl. Publ., 10pp.

CODEN: USXXCO

DOCUMENT TYPE:

Patent English

LANGUAGE: FAMILY ACC. NUM. COUNT:

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20070027348	A1	20070201	US 2006-456126	20060707
CN 1911512 ·	Α	20070214	CN 2006-10105441	20060705
JP 2007038216	A ·	20070215	JP 2006-187242	20060706
PRIORITY APPLN. INFO.	:		JP 2005-199350	20050707

MARPAT 146:208362 OTHER SOURCE(S):

The present invention provides a novel fluorination catalyst that has high stability at high temps., is easily regenerated and is superior in catalytic activity and selectivity and a method for the preparation of the fluorination catalyst. The present invention also provides a method for the preparation of a novel fluorinated compound, and particularly, 1,1,1,3,3-pentafluoropropane (HFC-245fa), by using the catalyst. fluorination catalyst of the present invention is obtained by treating a metal salt containing a chromium salt such as chromium oxide with chlorine gas and/or oxygen gas. Examples of the metal salt may include, besides a chromium salt, one or more catalytically active metal salts selected from magnesium salts, aluminum salts, zinc salts, sodium salts, nickel salts, iron salts, cobalt salts, vanadium salts, manganese salts and copper salts.

NOTE: Alternative preparations gave similar to lower conversions, gas

phase, optimization study, thermal STAGE(1) room temperature; 4 hours, 400 deg C STAGE(2) 150 deg C CON:

ANSWER 3 OF 12 CASREACT COPYRIGHT 2008 ACS on STN

143:442384 CASREACT ACCESSION NUMBER:

Investigation into antimony pentafluoride-based TITLE:

catalyst in preparing organo-fluorine compounds

Yang, Hui-e; Quan, Heng-dao; Tamura, Masanori; Sekiya, AUTHOR(S):

Akira

National Institute of Advanced Industrial Science and CORPORATE SOURCE:

09/29/200829/09/2008 Page 5

Technology (AIST), Tsukuba, Ibaraki, 305-8565, Japan SOURCE:

Journal of Molecular Catalysis A: Chemical (2005),

233(1-2), 99-104

CODEN: JMCCF2; ISSN: 1381-1169

PUBLISHER: ·

Elsevier B.V.

DOCUMENT TYPE:

Journal

LANGUAGE:

English

Antimony pentafluoride (SbF5)/porous metal fluorides (PMF) were prepared by impregnation of PMF with SbCl5 followed by fluorination with anhydrous hydrogen fluoride (AHF). The PMFs include Al fluoride, Mg fluoride, Ca fluoride, and Cr fluoride, prepared from the corresponding oxides. The SbF5/PMF demonstrates excellent activity as catalyst in vapor-phase fluorination of hydrocarbons and overcomes such drawbacks as hygroscopicity, corrosion, and toxicity that appear when SbF5 is used alone. The SbF5/PMF catalyst system was characterized by x-ray diffraction, XPS, BET surface area measurements, and SEM. The catalytic activity was evaluated in vapor-phased fixed-bed fluorination of chlorinated hydrocarbons.

RX(2) OF 6

 $F_3C-CH=CH-F$ C:7784-18-1, SbF5, HF F<sub>3</sub>C-CH=CH-Cl 39%

> F3C-CH2-CHF2 45%

NOTE: stereoselective, in the vapour-phase

CON: 1.7 seconds, 303 deg C

RX(3) OF 6

 $F_3C-CH=CH-F$ C:7784-18-1, SbF5, HF  $F_3C-CH=CH-C1$ 63%

F3C-CH2-CHF2

NOTE: stereoselective, in the vapour-phase CON: 1.7 seconds, 350  $\deg$  C

REFERENCE COUNT:

25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

ANSWER 4 OF 12 CASREACT COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER:

142:158394 CASREACT

TITLE:

Two-step process for the manufacture of

1,3,3,3-tetrafluoropropene from 1-chloro-3,3,3-

trifluoropropene

INVENTOR(S):

Tung, Hsueh Sung; Johnson, Robert C.; Merkel, Daniel

PATENT ASSIGNEE(S):

Honeywell International Inc., USA

SOURCE:

U.S. Pat. Appl. Publ., 6 pp.

CODEN: USXXCO

DOCUMENT TYPE:

Patent

LANGUAGE:

English

09/29/200829/09/2008 Page 6 FAMILY ACC. NUM. COUNT: 26 PATENT INFORMATION:

PA'	TENT NO.	KIND DATE	APPLICATION NO. DATE
WO	20050020862 2005012212 2005012212	A1 20050127 A2 20050210 A3 20050331	US 2003-626997 20030725 WO 2004-US23160 20040721
	CN, CO, GE, GH, LK, LR, NO, NZ,	CR, CU, CZ, DE, GM, HR, HU, ID, LS, LT, LU, LV, OM, PG, PH, PL,	AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY,
	RW: BW, GH, AZ, BY, EE, ES,	GM, KE, LS, MW, KG, KZ, MD, RU, FI, FR, GB, GR, TR, BF, BJ, CF,	UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE,
EP	1658252	A2 20060524	EP 2004-778595 20040721
JP US CA CA	R: DE, ES, 1852880 2007500127 20070129579 2608327 2608675 1916231	FR, GB, IT A 20061025 T 20070111 A1 20070607 A1 20080427 A1 20080427 A2 20080430	CN 2004-80027096 20040721 JP 2006-521162 20040721 US 2006-588465 20061027 CA 2007-2608327 20071026 CA 2007-2608675 20071026 EP 2007-119432 20071026
DI.	R: AT, BE, IS, IT,	BG, CH, CY, CZ,	DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR,
EP	IS, IT,	LI, LT, LU, LV, HR, MK, RS	EP 2007-119443 20071026 DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR,
KR KR	CH, CN, GB, GD, KM, KN, MG, MK, PT, RO, TR, TT, RW: AT, BE, IS, IT, BJ, CF, GH, GM, BY, KG, 2008038074 2008038075	CO, CR, CU, CZ, GE, GH, GM, GT, KP, KR, KZ, LA, MN, MW, MX, MY, RS, RU, SC, SD, TZ, UA, UG, US, BG, CH, CY, CZ, LT, LU, LV, MC, CG, CI, CM, GA, KE, LS, MW, MZ, KZ, MD, RU, TJ, A 20080502 A 20080502	DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, MT, NL, PL, PT, RO, SE, SI, SK, TR, BF, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, TM  KR 2007-109198 20071029 KR 2007-109199 20071029
CN JP CN	2008110980 101182280 2008162999 101260021 Y APPLN. INFO	A 20080515 A 20080521 A 20080717 A 20080910	JP 2007-280802 20071029 CN 2007-10199937 20071029 JP 2007-280719 20071029 CN 2007-10159615 20071029 US 2003-626997 20030725 US 2003-694272 20031027 WO 2004-US23160 20040721 US 2005-118503 20050429 US 2005-733355P 20051103 US 2006-763086P 20060127 US 2006-588464 20061027

US 2006-588465 20061027 US 2006-588671 20061027

1,3,3,3-Tetrafluoropropene is prepared by: (A) reacting 1-chloro-3,3,3-trifluoropropene with hydrogen fluoride in the vapor phase and in the presence of a fluorination catalyst and under conditions sufficient to form an intermediate product comprising 1-chloro-1,3,3,3-tetrafluoropropane and/or 1,1,1,3,3-pentafluoropropane; and (B) reacting the intermediate product with a caustic solution (e.g., aqueous NaOH) and under conditions sufficient to dehydrochlorinate 1-chloro-1,3,3,3-tetrafluoropropane and/or to dehydrofluorinate 1,1,1,3,3-pentafluoropropane, forming 1,3,3,3-tetrafluoropropene.

RX(1) OF 5

$$F_3C-CH=CH-C1$$
 SbC15, HF, C12  $F_3C-CH_2-CHF_2$  +  $C1$   $F-CH-CH_2-CF_3$ 

NOTE: optimization study, other products also detected CON: 12 seconds, 70 deg C, 45 psi

L2 ANSWER 5 OF 12 CASREACT COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 136:279103 CASREACT

TITLE: Preparation of 1,1,1,3,3-pentafluoropropane

INVENTOR(S): Kaneda, Shozo; Ishihara, Akira; Sakyu, Fuyuhiko;

Hibino, Yasuo

PATENT ASSIGNEE(S): Central Glass Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002105006 JP 3880300	A B2	20020410 20070214	JP 2000-298230	20000929

PRIORITY APPLN. INFO.:

AB The compound (I) is prepared by fluorination of 1-chloro-3,3,3trifluoropropene or 1,3,3,3-tetrafluoropropene with HF in the presence of
Cl, wherein fluorination apparatus has a reactor (A) packed with SbCl5/C with
temperature ≥150° and a reactor (B) packed with SbCl5/C with temperature
20-150° in series and reactor A and B are used as the first reactor
alternately and repeatedly. 1-Chloro-3,3,3-trifluoropropene was
fluorinated with HF in the presence of Cl and SbCl5/C at 180° in
the first reactor and 80° in the second reactor to give 98.1% I.

RX(1) OF 1

$$F_3C-CH=CH-C1$$
 SbC15, HF, C12  $F_3C-CH_2-CHF_2$ 

NOTE: gas phase, reactor A at 180.degree. and reactor B at 80.degree.

L2 ANSWER 6 OF 12 CASREACT COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 135:357696 CASREACT

TITLE: Preparation of 1,1,1,3,3-pentafluoropropane

INVENTOR(S): Chen, Bin; Elsheikh, Maher Yousef PATENT ASSIGNEE(S): ATOFINA Chemicals, Inc., USA SOURCE: Jpn. Kokai Tokkyo Koho, 3 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PA	TENT	NO.		KI	ND I	DATE			AP	PLIC	CATIO	ON NO	٥.	DATE			
. JP	2001	3163	05	Α	:	2001	1113		JP	200	1-1	04313	L	20010	0403		
EP	1153	906		A.	1 :	2001	1114		EΡ	200	1 - 30	0144	7	20010	0219		
EP	1153	906		В	1 :	2003	0521										
	R:	AT,	BE,	CH,	DE,	DK,	ES,	FR,	GB,	GR,	IT,	LI,	LU,	NL,	SE,	MC,	PT,
		ΙE,	SI,	LT,	LV,	FI,	RO										
AT	2409	19		T		2003	0615		AT	200	1-3	0144	7	20010	0219		
ES	2198	385		$\mathbf{T}^{3}$	3 :	2004	0201		ES	200	1-30	0144	7	20010	0219		
CN	1331	067		Ą		2002	0116		CN	200	1-1	04779	9	2001	0221		
MX	2001	PA02	921	Α		2002	0424		MX	200	)1-P	A292:	l	2001	0320		
PRIORIT	Y APF	LN.	INFO	.:					US	200	0-5	67169	9	20000	0508		
OTHER S	OURCE	(S):			MAR	PAT	135:	35769	6								

AB Title compound is prepared by hydrofluorination of 1,1,1-trifluoro-3-chloro-2-propene containing <100 ppm CF3-aClaCH:CHbCl2-b (a = 1-3; b = 0-2) as

propene containing <100 ppm CF3-aClaCH:CHbCl2-b (a=1-3; b=0-2) as impurities. 1,1,1-Trifluoro-3-chloro-2-propene containing no impurities are reacted with HF in the presence of a catalyst at 380°. The catalyst showed activity after 400 h.

RX(1) OF 1

 $F_3C-CH=CH-C1$   $\xrightarrow{HF}$   $F_3C-CH_2-CHF_2$ 

NOTE: gas phase, reactant contg. no impurity, no detail for metal catalyst

L2 ANSWER 7 OF 12 CASREACT COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 134:17260 CASREACT

TITLE: Preparation of 1,1,1,3,3-pentafluoropropane

INVENTOR(S): Elsheikh, Maher Yousef; Chen, Bin
PATENT ASSIGNEE(S): Elf Atochem North America, Inc., USA

SOURCE: Jpn. Kokai Tokkyo Koho, 3 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000336048	Α	20001205	JP 2000-139766	20000512
US 6528691	В1	20030304	US 1999-312267	19990514
CA 2307414	A1	20001114	CA 2000-2307414	20000502
CA 2307414	С	20080722		
MX 2000PA04617	Α	20020308	MX 2000-PA4617	20000512
PRIORITY APPLN. INFO.:	:		US 1999-312267	19990514

AB Title compound (I; 245fa) is prepared by treating 1,1,1-trifluoro-3-chloro-2-propene (II; 1233zd) with HF in the presence of supported Sb halide catalysts in gas phases. II was treated with HF in the presence of SbCl5/activated C at 112° and contact time 47 s to give I with 97.7% selectivity at 96.6% conversion.

RX(1) OF 1

 $F_3C-CH=CH-C1$  SbC15, HF  $F_3C-CH_2-CHF_2$ 

NOTE: gas phase

L2 ANSWER 8 OF 12 CASREACT COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 130:311526 CASREACT

TITLE: Preparation of halogenated propanes from halogenated

propenes

INVENTOR(S): Tamai, Ryoichi; Yoshikawa, Satoru; Hibino, Yasuo

PATENT ASSIGNEE(S): Central Glass Co., Ltd., Japan SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 11106358	Α	19990420	JP 1997-270106	19971002
JP 4079482	В2	20080423		
DRITY APPLN. INFO.	:		JP 1997-270106	19971002

PRIORITY APPLN. INFO.:
OTHER SOURCE(S): MARPAT 130:311526

AB CF3-bClbCH2CHYZ (Y, Z = F, Cl; b = 0-3), useful as blowing agents, refrigerants, solvents, propellants, etc. (no data), are prepared by reaction of CF3-aClaCH:CHX (X = F, Cl; a = 0-3) with HF under pressure in gas phases in the presence of fluorination catalysts. CF3CH:CHCl was treated with HF using Cr/activated C at 270° under 0.5 MPa to give 79.4% CF3CH2CHF2.

RX(1) OF 1

 $F_3C-CH=CH-C1$  Cr, Carbon, HF  $F_3C-CH_2-CHF_2$ 

L2 ANSWER 9 OF 12 CASREACT COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 128:217103 CASREACT

TITLE: Preparation of 1,1,1,3,3-pentafluoropropane from

1-chloro-3,3,3-trifluoropropene

INVENTOR(S): Sakyu, Fuyuhiko; Yoshikawa, Satoshi; Hibino, Yasuo

PATENT ASSIGNEE(S): Central Glass Co., Ltd., Japan SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 3

09/29/200829/09/2008 Page 10

## PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10072381	 A	19980317	JP 1996-226638	19960828
JP 3164288	B2	20010508	01 1990 220030	13300020
US 6235951	. B1	20010522	US 1996-752879	19961120
PRIORITY APPLN. INFO.	:		JP 1996-5971	19960117
			JP 1996-222004	19960823
			JP 1996-226638	19960828

AB 1,1,1,3,3-Pentafluoropropane (I), useful as blowing agents or refrigerants (no data), is prepared by catalytic addition reaction of HF to 1-chloro-3,3,3-trifluoropropene (II) and catalytic disproportionation of the resulting 1,1,1,3-tetrafluoro-3-chloropropane (III). II (64.1 g) was treated with HF in the presence of SbCl5 at 80° under 6 kg/cm2G for 3 h to give 37.2 g product containing 57.9% I and 10.7% III.

RX(1) OF 1

$$F_3C-CH=CH-C1$$
 SbC15, HF  $F_3C-CH_2-CHF_2$  +  $F_3C-CH_2-CHF_2$  +  $F_3C-CH_2-CF_2$ 

L2 ANSWER 10 OF 12 CASREACT COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER:

128:24279 CASREACT

TITLE:

Preparation of 1-chloro-3,3,3-trifluoropropene and its

liquid-phase fluorination into 1,1,1,3,3-

pentafluoropropane

INVENTOR(S):

Lantz, Andre; Requieme, Benoit; Wendlinger, Laurent

PATENT ASSIGNEE(S):

Elf Atochem S.A., Fr. Ger. Offen., 11 pp.

SOURCE:

CODEN: GWXXBX

DOCUMENT TYPE:

Patent

LANGUAGE:

German

FAMILY ACC. NUM. COUNT:

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 19716337	A1	19971120	DE 1997-19716337	19970420
FR 2748473	A1	19971114	FR 1996-5908	19960513
FR 2748473	В1	19980724		
CA 2203433	A1	19971113	CA 1997-2203433	19970422
ES 2128256	A1	19990501	ES 1997-910	19970428
ES 2128256	B1	20000116		
GB 2313118	А	19971119	GB 1997-9202	19970506
CN 1166479	Α	19971203	CN 1997-111593	19970513
JP 10087523	Α	19980407	JP 1997-122453	19970513
PRIORITY APPLN. INFO.	:		FR 1996-5908	19960513

AB 1,1,1,3,3-Pentafluoropropane, useful as a propellant gas (no data), a foaming agent (no data), and as a cooling agent (no data), is prepared in high yield and selectivity by the catalytic fluorination of 1-chlor-3,3,3-trifluoropropene (I) with anhydrous HF, and I is prepared by the gas-phase, fluorination of 1,1,1,3,3-pentachloropropane.

RX(1) OF 1

$$F_3C$$
  $\longrightarrow$   $F_3C$   $\longrightarrow$   $F_3C$ 

NOTE: 50-150.deg., ACID

ANSWER 11 OF 12 CASREACT COPYRIGHT 2008 ACS on STN L2

ACCESSION NUMBER:

127:262435 CASREACT

Preparation of 1,1,1,3,3-pentafluoropropane from TITLE:

1-chloro-3,3,3-trifluoropropene

INVENTOR(S): Yoshikawa, Satoru; Tamai, Ryoichi; Saku, Fuyuhiko;

Hibino, Yasuo.

Central Glass Co., Ltd., Japan PATENT ASSIGNEE(S):

Jpn. Kokai Tokkyo Koho, 4 pp. SOURCE:

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: PATENT INFORMATION:

PATENT NO.	KIND	DATE	AP	PLICATION NO.	DATE
,					
JP 09241188	Α	19970916	JP	1996-47641	19960305
JP 3183819	В2	20010709			
US 6316681	В1	20011113	US	1996-982803	19961204
US 6198010	B1	20010306	US	1998-166838	19981006
PRIORITY APPLN. INFO.	:		- JP	1996-47641	19960305
			JP	1996-81557	19960403
			US	1996-982803	19961204

F2CHCH2CF3 is prepared by liquid phase fluorination of C1CH:CHCF3 in the AB presence of Sb catalysts. ClCH:CHCF3 (34.6 g) was autoclaved with HF and SbCl5 at 71° and 10 kg/cm2 for 3 h to give 28.7 g products containing 93.9% F2CHCH2CF3.

RX(1) OF 1

 $F_3C-CH=CH-C1$  SbC15, HF  $F_3C-CH_2-CHF_2$ 

L2 ANSWER 12 OF 12 CASREACT COPYRIGHT 2008 ACS on STN .

ACCESSION NUMBER:

127:95018 CASREACT

TITLE:

Process for producing 1,1,1,3,3-pentafluoropropane by

fluorination of 1,1,1,3,3-pentachloropropane

Nakada, Tatsuo; Aoyama, Hirokazu; Yamamoto, Akinori INVENTOR(S):

PATENT ASSIGNEE(S): Daikin Industries Ltd., Japan

PCT Int. Appl., 18 pp. SOURCE:

CODEN: PIXXD2

DOCUMENT TYPE: Patent Japanese LANGUAGE:

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

KIND DATE APPLICATION NO. DATE PATENT NO.

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WO 9724307
                       Α1
                            19970710
                                            WO 1996-JP2942
                                                              19961008
             AM, AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI,
             GB, GE, HU, IS, KE, KG, KR, KZ, LK, LR, LT, LU, LV, MD, MG, MN,
             MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TT,
             UA, US, UZ, VN
         RW: KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR,
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             MR, NE, SN, TD, TG
   JP 09183740
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    CN 1224410
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                       Α
                             20000125
                                            US 1998-91820
                                                              19980625
    US 6018084
                                            JP 1995-354118
                                                              19951229
PRIORITY APPLN. INFO.:
                                            WO 1996-JP2942
                                                              19961008
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AB Characterized is a process for producing 1,1,1,3,3-pentafluoropropane (I) using fluorination catalyst which involves (1) gas-phase reacting 1,1,1,3,3-pentachloropropane with HF to thereby give 1,1,1-trifluoro-3-chloro-2-propene (II); and (2) gas-phase reacting II with HF to thereby give I; wherein II obtained in the first step is fed into the second step after eliminating HCl formed as the byproduct therefrom. Thus, an economical and novel process for producing I, which is an useful as foaming and blowing agents, can be provided in a high yield with a good selectivity.

RX(2) OF 3

$$F_3C-CH=CH-C1$$
 $C:10103-47-6$ , HF

 $F_3C-CH=CH-F$ 

23%

NOTE: 250.degree., reactant 4 and 5 at 20 and 200 cc/min feeding speed resp.

---Logging off of STN---

Executing the logoff script...

=> LOG Y

COST IN U.S. DOLLARS	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED COST	191.00	191.21
DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE ENTRY	TOTAL SESSION
CA SUBSCRIBER PRICE	-9.00	-9.00

STN INTERNATIONAL LOGOFF AT 17:18:17 ON 29 SEP 2008